

**DETERMINATION OF FATTY ACID METHYL ESTER BY  
TRANSESTERIFICATION REACTION OF WASTE COOKING  
OIL OBTAINED FROM DIFFERENT SOURCES**

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## **ABSTRACT**

### **DETERMINATION OF FATTY ACID METHYL ESTER BY TRANSESTERIFICATION REACTION OF WASTE COOKING OIL OBTAINED FROM DIFFERENT SOURCES**

Biodiesel is a fully renewable liquid fuel source that can be used as an alternative to petroleum diesel fuel. Biodiesel comprised of mono-alkyl esters of long-chain fatty acids derived from vegetable oils or animal fats. In this study, fatty acid methyl ester was produced from different sources of waste cooking oil. Waste cooking oil has suitable characteristics for transesterification reaction. The objective of this study was to determine the composition and percentage yield of methyl ester obtained from fried chicken waste cooking oil, reused waste cooking oil, and fried banana waste cooking oil. The parameters used were methanol/oil ratio expressing in volume of oil (10 ml) and methanol (12 ml), catalyst (0.6g KOH), and the operating temperature (55 °C). The methyl ester layer was analyzed by using Gas Chromatography Mass Spectrometer and the percentage yield was calculated. The major fatty acid methyl esters produced from different sources of waste cooking oil were octadecenoic acid methyl ester and hexadecanoic acid methyl ester. In this study, the percentage yield was in the range between 90-99%.